/	61P = J	Cross							
<b>1</b>	SEP. 0 3 200	3			·			0	
Ó	FORM PTO	<b>¥449</b>			OF COMMERCE	Attorney's Docket No.		Serial No.	heet 1 of
	(REV. 8-89)			ent and Tradem		22920-0	06460		<u>/087,408</u>
,	"	rok	MATION DISCLOSU		IION	Applicant	Xiaodong H	uang et al.	
			(Use several sheets if neces		·	Filing Date March 1	2002	Group Art Unit Uni	assigned
		<del></del>		U.S. PA	TENT DOC	UMENTS			
	Examiner initia		Document Number	Date		Name	Class	Subclass	Filing Date If Appropriate
•	2	1	6,052,400	4/18/00	Na	inbu et al.	372	50	3/31/98
	3/2	2	5,817,538	10/6/98	M	ukai et al.	438	41	12/3/96
		3	5,614,435	3/25/97	·	troff et al.	437	110	10/27/94
			OTHER DOCU	MENTS (	ncluding Author	, Title, Date, Pertir	nent Pages, Et	c.)	
إ	70	.4	Asryan, L.V.; and Suris Selected Topics In Qua	. R.A.: <i>Chai</i>	rge Neutrality \	/iolation In Quan	tum - Dot La	com: IEEE	Journal Of
	13	5	bimberg, D.; Kirstaedte	r; N.; Leder	nstov. N.N.: Alf	erov. Zh.l.: Kop'e	ev P.S. and	Listinov: V	M · InGaAs-
Ţ	<i>)</i> ( <i>(</i> ( <i>(</i> ( <i>(</i> ( <i>(</i> ( <i>(</i> ( <i>(</i> ( ( ( (	]	Gans Quantum Dot Las	sers; ieee .	Journal Of Sele	ected Topics In C	Quantum Elec	tronics, Vo	l. 3, No. 2:
Y	12	6	<u> PAPIII 1997, pp. 196-205</u>	:					
			Bossert, D.J.; and Galla Lasers; Electronics Lett	ers: Vol. 32	rovea metnoa i 2. No. 4 <sup>.</sup> Februa	- <i>or Gain/Index N</i> arv 15-1996: nn	/leasurement: - 338_330	s Of Semice	onductor
I	30	7	Bossert, David J.; and C	Gallant, Day	≀id: Gain. <i>Refra</i>	ctive Index And	n-Parameter	In InGaAs	-GaAs SQW
ľ	111	8	Broad-Area Lasers; IEE Brandt, O.; Ploog, K.; ar	nd Tapfer, L	.: Formation A	nd Morphology (	0. 3; March 1 Of InAs/GaAs	996; pp. 32	2-324.
ķ			Priysical Review; Vol. 4:	5, No⊱15; A	April 15. 1992: r	op. 8443-8452		• •	•
ĺ	10	9.	Brault, J.; Gendry, M.; G	Grenet, G.; a	and Hollinger. (	G : Role Of Buffe	r Surface Mo	rphology A	nd Alloying
ķ	ノリノ		Effects On The Propertion 73, No. 20; November 1	es ut inas i	Nanostructures	s Grown On InP(	(001); Applied	Physics Le	etters; Vol.
Γ	M	10	Brault, J.; Gendry, M.; N	larty, O.: Pi	taval. M.: Oliva	res. J.: Grenet. (	G : and Hollin	ger G Sta	aggarad
l	$\mathcal{N}$		Vertical Self-Organization	in of Stack	ea inas/ina1as	s Quantum Wires	s On INP(001	); Applied S	Surface
F	<del>- '/-  </del>	11	DCIENCE, VOI. 102-103, A	August 2000	J: DD. 584-589.		•		
l	1	. ••	Choo, Heung Ro; O, Bed Kim, Hong Man; and Pyt Multiple Oventum Mon.	un. Kwana I	ark, Cnong Da Eui: <i>Imnr</i> ove <i>mi</i>	ie; Kim, Hyung M ant Of Linewidth	lun; Kim, Jeo	ng Soo; Ot	n, Dae Kon;
	<i>)\</i> ))		hanninhio-Anglitalli-Meli f	aser Diode	s; IEEE Photo	nics Technology	Letters: Vol	<i>IL Factor In</i> 10 No 5: N	<i>1.55-µm</i> May 1908∙
l			pp. 040-047.						
	10	12	Chou, S.T.; Hsieh, K.C.;	Cheng, K.\	/.; and Chou, L	J.; Growth Of G	a <sub>x</sub> In <sub>1-x</sub> As Qua	antum Wire	· <u>, ···</u>
_	///		Heterostructures By The 13, No. 2; Mar/Apr 195;	UD.03U-03∠.	. '				
		13	Chyi, Jen-Inn; Nee, Tzer	-En: Lee. C	hing-Ting: Shie	eh, Jia-Lin; and F	Pan, Jen-Wei	Formation	Of Self-
	ノハル		Ciganized III0.5Gao.5AS G	luantum Do	isis un Gaas E	By Molecular Bea	am Epitaxy, J	ournal Of C	rystal
Ξ	1/1		Olowill, Vol. 173, 176, 18	997; pp. 77	<i>(-1</i> 81.				
	18)	•	Dutta, N.K.; Hobson, W.S Strain Compensated InG	aAs-GaAsi	ייטוו, ט., Han, H P-InGaP I aser	l.; rreeman, P.N. ∕ <i>IFFF Photonics</i>	.; de Jong, J. Technology	F.; and Lop	ata, J.;
-	ノント	9 _	July 1996: np. 852-854	<b></b>		1 1101011103	reciniology	reners, vo	ı. O, NQ. /;

DATE CONSIDERED EXAMINER: Initial if references considered, whether or not citation is in conformance with MPEP § 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

PTO-1449 REV: 02/01

July 1996; pp. 852-854

) ' ' : >				
,_ 'C'	2	·		· .
P 0 3 2002	iri V	•		
	9_			Sheet 2 of 3
FORM PTO	449	U.S. DEPARTMENT OF COMMERCE	Attorney's Docket No.	Serial No.
REV 6 889	•	Patent and Trademark Office	22920-06460	10/087,408
INF	ORI	MATION DISCLOSURE CITATION	Applicant	•
			Xiaodong l	luang et al.
		(Use several sheets if necessary)	Filing Date	Group Art Unit
			March 1, 2002	Unassigned
		OTHER DOCUMENTS (Including Author	r, Title, Date, Pertinent Pages, E	tc.)
(N)	15	Eliseev, P.G.; Li, H.; Liu, G.T.; Stintz, A.; Newell,	T.C.; Lester, L.F.; and Mallo	y, K.J.; Gain In Ultra-Low
<i>YV</i>		Threshold InAs/InGaAs Quantum Dot Lasers; Co		ternational Semiconducto
	16	Laser Conference; September 25-28, 2000; pp. (		
101	10	Eliseev, P.G.; Li, H.; Liu, G.T.; Stintz, Andreas; N	Newell, T.C.; Lester, L.F.; and	Malloy, K.J.; Ground-
1. V :		State Emission And Gain In Ultralow-Threshold I Selected Topics In Quantum Electronics; Vol. 7,	No 2: March/Anril 2001: 55	asers, ieee journal un 136-172
	17	Eliseev, P.G.; Li, H.; Liu, G.T.; Stintz, A.; Newell,	TC:Lester LF: and Mallo	V K 1: Ontical Cain In
$1 \in \mathcal{U}$		InAs/InGaAs Quantum –Dot Structures; Experim	ents And Theoretical Model	0 Jantum Flectronics
' Y		(8); 2000; pp. 664-668.		Tabiliani Ficolonios 30
$\overline{\Box}$	18	Eliseev, P.G.; Li, H.; Stintz, A.; Liu, G.T.; Newell,	T.C.; Malloy, K.J.; and Leste	r, L.F.; Transition Dipole
1 ( )/.		Moment Of InAs/InGaAs Quantum Dots From Ex	periments On Ultralow-Thres	shold Laser Diodes:
<b>Y</b>		Applied Physics Letters; Vol. 77, No. 2; July 10, 2	2000; pp. 262-264.	
	19	Eliseev, P.G.; Li, H.; Stintz, A.; Liu, G.T.; Newell,	T.C.; Malloy, K.J.; and Leste	r, L.F.; Tunable Grating-
		Coupled Laser Oscillation And Spectral Hole Bur	ning In An InAs Quantum-Do	t Laser Diode; IEEE
$\leftarrow$	20	Journal Of Quantum Electronics; Vol. 36, No. 4;	April 2000; pp. 479-485.	
( )	20	Fiore, A.; Borri; P.; Langbein, W.; Hvam, J.M.; Od	esterie, U.; Houdre, R.; and I	legems, M.; Time-
		Resolved Characterization Of InAs/InGaAs Quan Arsenide; CLEO 2000 Conference; May 2000; p.	ilum dol Gain Matenai For 1. 348	3 µm Lasers On Gallium
	21	Gingrich, H.S.; Chumney, D.R.; Sun, SZ.; Herse	e SD:Lester L E: and Bri	iook C.D. I.: Propelly
1 - Ck		Tunable External Cavity Laser Diodes With Stage	gered Thickness Multiple Out	antum Molle: IEEE
ント		Photonics Technology Letters; Vol. 9, No. 2; Febr	ruary 1997: pp. 155-157.	indir vvens, iccc
	22	Gonzalez, L.; Garcia, J.M.; Garcia, R.; Briones; F	.; Martinez-Pastor, J.; and Ba	allesteros, C.: Influence C
1) I		Buffer-Layer Surface Morphology On The Self-Or	rganized Growth Of InAs On	InP(001) Nanostructures
<u>/</u>		Applied Physics Letters; Vol. 76, No. 9; February	28, 2000; pp. 1104-1106.	
0 1	23	Grundman, M.; and Bimberg, D.; Theory Of Rand	dom Population For Quantum	Dots; Physical Review B
Y - I		Vol. 55, No. 15; April 15, 1997; pp. 9740-9745.		
$\supset \Gamma$	24	Guo, S.P.; Ohno, H.; Shen, A.; Matsukura, F.; and	d Ohno, Y.; InAs Self-Organia	zed Quantum Dashes
X	25	Grown On GaAs (211)B; Appl. Phys. Letters, Vol.	70, No. 20; May 19, 1997; p	p. 2738-2740.
, ( ),	20	Hakki, Basil W.; and Paoli, Thomas L.; Gain Spectournal Of Applied Physics, Vol. 46, No. 3: March	CITA ITI GAAS DOUDIO-Heteros 1 1075: pp. 1200-1200	tructure Injection Lasers;
$\prec$	26	Journal Of Applied Physics, Vol. 46, No. 3; March Hinzer, K.; Fafard, S.; SpringThorpe, A.J.; Arlett,	1 1970, pp. 1299-1306.	and Charles and Charles
()		Room Temperature Operation Of A1InAs/A1GaAs	s Quantum Dot Lagare: Dhue	ica E Vol. 2: 1009: no
		729-733.		
	27	Huang, X.; Stingz, A.; Hains, C.P.; Cheng, J.; and	Malloy, K.J.: Efficient High-1	Semperature CW
		Operation Of Oxide Confined Long-Wavelength In	nAs Quantum Dot Lasers: CL	EO 2000 Conference:
<u> </u>		May 2000; pp. 348-349.		•
$\bigcirc$ $\Box$	28	Huang, Xiaodong; Stintz, A.; Hains, C.P.; Liu, G.T	.; Cheng, J.; and Malloy, K.J.	; Efficient High-
<b>Y</b>		Temperature CW Lasing Operation Of Oxide-Con	fined Long-Wavelength InAs	Quantum Dot Lasers;
<del>/</del>	20	Electronics Letters; Vol. 36, No. 1; January 6, 200	0.	
カン	29	Huang, Xiaodong; Stintz, A.; Hains, C.P.; Liu, G.T.	.; Cheng, Julian; and Malloy,	K.J.; Very Low
		Threshold Current Density Room Temperature Co	Ontinuous-Wave Lasing From	A Single-Layer InAs
Wico I		Quantum-Dot Laser, IEEE Photonics Technology	Letters, voi. 12, No. 3; March	1 ZUUU; pp. 227-229.

EXAMINER: Initial if references considered, whether or not citation is in conformance with MPEP § 609; Draw line through citation if not in conformance and not considered linclude copy of this form with next communication to applicant.

DATE CONSIDERED



Sheet 3 of 7 **FORM PTO-1449** U.S. DEPARTMENT OF COMMERCE Altomey's Docket No. Serial No. (REV. 6-89) Patent and Trademark Office 22920-06460 10/087,408 INFORMATION DISCLOSURE CITATION **Applicant** Xiaodong Huang et al. (Use several sheets if necessary) Filing Date Group Art Unit March 1, 2002 Unassigned OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.) Huang, Xiaodong; Stintz, A.; Hua, Li; Lester, L.F.; Cheng, Julian; and Malloy, K.J.; Demonstration Of Passive Q-Switching And Passive Mode-Locking In 1.3 µm. Two-Section InAs Quantum Dot Lasers; Conference: CLEO 2001; May 2001; p. 359. Huffaker, D.L.; and Deppe, D.G.; Electroluminescence Efficiency of 1.3 µm Wavelength InGaAs/GaAs Quantum Dots; Applied Physics Letters; Vol. 73, No. 4; July 27, 1998; pp. 520-522. Kaspi, R.; and Evans, K.R.; Improved Compositional Abruptness At The InGaAs On GaAs Interface By Presaturation With In During Molecular-Beam Epitaxy, Appl. Phys. Lett.; Vol. 67, No. 6; August 7, 1995; pp. 819-821. Kirstaedter, N.; Ledenstov, N.N.; Grundmann, M.; Bimberg, D.; Ustinov, V.M.; Ruvimov, S.S.; Maximov, M.V.; Kop'ev, P.S.; Alferov, Zh.I.; Richter, U.; Werner, P.; Gosele, U.; and Heydenreich, J.; Low Threshold, Large To Injection Laser Emission From (InGa)As Quantum Dots; Electronics Letters, Vol. 30, No. 17; August 18, 1994; pp. 1416-1417. Lester, Luke F.; Materials Growth And Device Characterization Of InAs Quantum Dot Lasers; Conference: LEOS; November 15, 2000. Lester, L.F.; Stintz, A.; Li, H.; Newell, T.C.; Pease, E.A.; Fuchs, B.A.; and Malloy, K.J.; Optical Characteristics Of 1.24-µm InAs Quantum-Dot Laser Diodes; IEEE Photonics Technology Letters, Vol. 11. No. 8, August 1999; pp. 931-933. Li, H.; Liu, G.T.; Varangis, P.M.; Newell, T.C.; Stintz, A.; Fuchs, B.; Malloy, K.J.; and Lester, L.F.; 150nm Tuning Range In A Grating-Coupled External Cavity Quantum-Dot Laser; 2000 CLEO Europe Conference: September 2000. Li, H.; Liu, G.T.; Varangis, P.M.; Newell, T.C.; Stintz, A.; Fuchs, B.; Malloy, K.J.; and Lester, L.F.; 150nm Tuning Range In A Grating-Coupled External Cavity Quantum-Dot Laser, IEEE Photonics Technology Letters, Vol. 12, No. 7, July 2000; pp. 759-761. Li, H.; Newell, T.C.; Liu, G.T.; Stintz, A.; Malloy, K.; and Lester, L.F.; Carrier Lifetime And Radiative Recombination In Quantum Dot LEDs; IEEE 2000 LEOS Annual Meeting; November 2000; pp. 376-Li, Y.F.; Lin, F.; Xu, B.; Liu, R.Q.; Ye, X.L.; Ding, D.; and Wang Z.G.; Influence Of Growth Conditions On Self-Assembled InAs Nanostructures Grown On (001)InP Substrate By Molecular Beam Epitaxy, Journal of Crystal Growth; Vol. 223; 2001; pp. 518-522. Li, Y.F.; Ye, X.L.; Xu, B.; Liu, F.Q.; Ding, D.; Jiang, W.H.; Sun, Z.Z.; Zhang, Y.C.; Liu, H.Y.; and Wang, Z.G.; Room Temperature 1.55 µm Emission From InAs Quantum Dots Grown On (001)InP Substrate By Molecular Beam Epitaxy, Journal Of Crystal Growth; Vol. 218; 2000; pp. 451-454. Li, Yue-Fa; Liu, Feng-Qi; Xu, Bo; Lin, Feng; Wu, Ju; Jiang, Wei-Hong; Ding, Ding; and Wang, Zhan-Guo; InAs Self-Assembled Nanostructures Grown On InP(001); Chinese Physics; Vol. 9, No. 3; March 2000; pp. 222-224. Lian, G.D.; Yuan, J.; Brown, L.M.; Kim, G.H.; and Ritchie, D.A.; Modification Of InAs Quantum Dot Structure By The Growth Of The Capping Layer, Applied Physics Letters; Vol. 73, No. 1; July 6, 1998; p. 49-51 DATE CONSIDERED EXAMINER: Initial if references considered, whether or not citation is in conformance with MPEP § 609; Draw line through citation if not in conformance and not considered. include copy of this form with next communication to applicant.



FORM STO	4 4 4 4 4		TEON OCP - 5	Sheet 4 f
FORM PTO-	1449	U.S. DEPARTMENT OF COMMERCE	Attorney's booket No. <002	Serial No.
(REV. 6-89)		Patent and Trademark Office	22920-06460	10/087 408
INF	ORI	MATION DISCLOSURE CITATION	Applicant CR 280	
1			Xiaodong	Huang et al.
1		(Use several sheets if necessary)	Filing Date	Group Art Unit
<del></del>			March 1, 2002	Unassigned
		OTHER DOCUMENTS (Including Author	, Title, Date, Pertinent Pages,	Etc.)
16)	43	Liu, G. I.; Li, H.; Stintz, A.; Newell, T.C.: Lester, I	F and Malloy K L Moda	Gain And T Value
		limbiovements in Quantum Dot Lasers Using Do	ts-In-A-Well (DWFLL) Struc	ture: IFFF 2000
-	<u> </u>	<u> International Semiconductor Laser Conference: r</u>	op. 133-134	
	44	Liu, G.T.; Stintz, A.; Li. H.; Lester, L.F. and Mallo	V   F · / //tra-Low Throshol	d Current Density Quantu
\ <u>\</u> \-/		Por casers using the Dors-In-A-Well (DWELL) s	Structure: Conference: Phys	ice And Cimulation Of
ノソ	ĺ	Optoblectionic Devices - Conference 8 Procee	dings - SPIE The Internation	anal Society For Ontical
		<u>  Engineering, vol. 3944; 2000; pp. 814-822.</u>		·
	45	,	er, L.F.; Extremely Low Roo	m-Temperature Threshold
$\supset \supset \setminus \setminus$		Carrent Density Diode Lasers Using InAs Dots In	Ino.15Gao.85As Quantum We	ell: Electronics Letters: Vo
	40	199, 140. 14, July 6, 1999.		
\ _	46	Liu, G.T.; Stintz, A.; Li, H.; Malloy, K.J.; and Leste	er, L.F.; 1.25 µm Low Threst	hold Current Density Dots
11		pri-A-vver (Dvvell) Lasers, Conference: 1999 Di	lest Of The LEOS Summer	Topical Mostings
ノツル		hydrostructures And Chautrim Dots/MDW Combo	pnents/VCSELs And Mirocar	vaties/RF Photonics For
	47	<u> 1021 v 2010</u> nrc Systems, July 26-30, 1999.		•
12	47	Liu, G.T.; Stintz, A.; Li, H.; Newell, T.C.; Gray, A.L	; Varangis, P.M.; Malloy, K	J.; and Lester, L.F.; The
$\{(f,f)\}$		mindence Of Quartuiti-vveil Composition On The	Performance Of Quantum f	Ont Lacore Union
$\bigvee X \mid$		INASINGAAS DOIS-IN-A-Well (DWELL) Structures:	IEEE Journal Of Quantum	Electronics, Vol. 36, No.
	48	117, November 2000, pp. 1272-1279		
)( )( <u> </u>	40	Liu, G.T.; Stintz, A.; Li, H.; Newell, T.C.; Varangis,	P.; Malloy, K.J.; and Lester	, L.F.; One And Three-
ノツー		lorger drawing por rasers with very row intest	10Id Current Density Confe	rence: Conference On
$\tau$	49	Lasers And Electo-Optics (CLEO 2000); 2000; Ma	y 2000; pp.346-347.	
1/2/1	<b>45</b>	Liu, Guangtian; Characteristics Of Ultralow Thresh	nold Quantum-Dot Lasers U	sing InAs/InGaAs Dots-In
7 9/		A-Well Structures; Thesis (Ph.D.); University of Ne Engineering; December 2000; pp. 1-120.	ew Mexico; Dept. of Electric	al And Computer
1	50	ill Guangtian: Very Low Poom Tompombure The		
20)		Liu, Guangtian; Very Low Room-Temperature Thr	esnoid Current Density Dots	s In A Well (DWELL)
		Lasers; Conference: 1999 IEEE LEOS Annual Meding; IEEE Lasers And Electro-Optics Society;	November 4000	igs. LEOS'99; 12 Annual
	51	Lott, J.A.; Ledentsov, N.N.; Ustimov, V.M.; Maleev	November 1999; vol. 2; pp.	469-470.
101		Volovik, B.V.; Alferov, Zh.I.; and Bimberg, D.; InAs	/, N.A., ZNUKOV, A.E.; KOVSI	n, A.R.; Maximov, M.V.;
7 Y		Emitting At 1.3µm; Electronics Letters; Vol. 36, No.	-MGBAS Quantum Dot VCS	ELS On GaAs Substrates
10	52	Marciante, John R.; and Agrawal, Govind P.; Spati	Temporal Charactaristic	Of Files
		Broad-Area Semiconductor Lasers; IEEE Journal (	o-remporar Characteristics Of Ouantum Flooteasias Ne	Of Filamentation In
/ /	}	pp. 1174-1179.	or weartuin Electronics, Vo	i. 33, No. 7; July 1997;
		Maximov, Mikhail V.; Kochnev, Igor V.; Shernyakov	/ Yuri M · Zaiteay Sarasi V	Condon Att v
10.	h	Tsatsul'nikov, Andrew F.; Sakharov, Alexey V.; Kre	r, Turi W., Zansev, Serger V Istnikov Igor I.: Koslov De	., Gordeev, Nikita Yu.;
		-egentaga, laikolai la., billibeld, Diefel, Kosodoa, a	Mexander O · Werner Deter	and Conde Hiller
_/	ľ	nganagana Quantum Dot Lasers With Ultrahigh	Characteristic Temporatura	(T - 2051/) O
	ľ	motal Organic Chemical Vapour Deposition; Jpn. J.	Appl. Phys.: Vol. 36 Pt. 1	No 68: 1007: no 4004
A14015=	<u>, 1</u>	1223.		110. 00, 1997, pp. 4221-
AMINER	) en	DATE CON	SIDERED 2/12/04	
AMINER: Initial if	referen	nces considered, whether or not citation is in conformance with MPEP §	309; Draw line through citation if not in c	borobiness ton bos esperanoines
ude copy of this f	orm with	n next communication to applicant.		and not considered.



7.71774 Sh et 5 of FORM PTO-1449 U.S. DEPARTMENT OF COMMERCE Attorney's Docket No. Serial No. (REV. 6-89) 22920-06460 Patent and Trademark Office 10/087,408 INFORMATION DISCLOSURE CITATION Applicant Xiaodong Huang et al. (Use several sheets if necessary) Filing Date **Group Art Unit** March 1, 2002 Unassigned OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.) Mehuys, D.; Mittelstein, M.: Yariv, A.; Sarfaty, R.; and Ungar, J.E.; Optimised Fabry-Perot (AIGa)As Quantum-Well Lasers Tunable Over 105nm; Electronic Letters; Vol. 25, No. 2; January 19, 1989; pp. 143-145. Mirin, R.; Gossard, A.; and Bowers, J.; Room Temperature Lasing From InGaAs Quantum Dots; Electronics Letters; Vol. 32, No. 18; August 29, 1996; pp.1732-1734. Morton, P.A.; Ackerman, D.A.; Shtengel, G.E.; Kazarinov, R.F.; Hybertsen, M.S.; Tanbun-Ek, T.; Logan, R.A.; and Sergent, A.M.; Gain Characteristics Of 1.55 µm High\_Speed Multiple-Quantum-Well Lasers; IEEE Photonics Technology Letters, Vol. 7, No. 8; August 1995; pp. 833-835. Mukai, K.; Nakata, Y.; Otsubo, K.; Sugawara, M.; Yokoyama, N.; and Ishikawa, H.; High Characteristic Temperature Of Near-1.3 µm InGaAs/GaAs Quantum-Dot Lasers; CLEO 2000 Conference; May 2000 pp. 345-346. Mukai, K.; Nakata, Y.; Shoji, H.; Sugawara, M.; Ohtsubo, K.; Yokoyama, N.; and Ishikawa, H.; Lasing With Low Threshold Current And High Output Power From Columnar-Shaped InAs/GaAs Quantum Dots; Electronics Letters; Vol. 34, No. 16; August 6, 1998, pp. 1588-1590. Mukai, Kohki; Ohtsuka, Nobuyuki; Shoji, Hajime; and Sugawara, Mitsuru; Growth And Optical Evaluation Of InGaAs/GaAs Quantum Dots Self-Formed During Alternate Supply Of Precursors; Applied Surface Science; Vol. 112; March 1997; pp. 102-109. Mukai, Kohki; Ohtsuka, Nobuyuki; Sugawara, Mitsuru; and Yamazaki; Susumu; Self-Formed Ino.sGao.sAs Quantum Dots On GaAs Substrates Emitting At 1.3 μm; Jpn. J. Appl. Phys. Vol. 33, Part 2, No. 12A; December 1, 1994; pp. 1710-1712. Newell, T.C.; Bossert, D.J.; Stintz, A.; Fuchs, B.; Malloy, K.J.; and Lester, L.F.; Gain And Linewidth Enhancement Factor In InAs Quantum-Dot Laser Diodes; IEEE Photonics Technology Letters; Vol. 11, No. 12; December 1999; pp. 1527-1529. Newell, T.C.; Li, H.; Eliseev, P.; Liu, G.T.; Stintz, A.; Malloy, K.J.; and Lester, L.F.; Broadening Mechanisms, Gain, And Low Linewidth Enhancement Factor In InAs Quantum Dot Lasers; Conference: CLEO 2000; May 2000; p. 363. Newell, T.C.; Li, H.; Stintz, A.; Bossert, D.; Fuchs, B.; Malloy, K.J.; and Lester, L.F.; Optical Characteristics And Low Linewidth Enhancement Factor in 1.2 µm Quantum Dot Lasers; Conference: 1999 IEEE LEOS Annual Meeting Conference Proceedings; LEOS'99; 12<sup>th</sup> Annual Meeting; IEEE Lasers And Electro-Optics Society 1999 Annual Meeting; November 8-11, 1999. Newell, T.C.; Varangis, P.; Pease, E.; Liu, G.T.; Stintz, A.; Malloy, K.; and Lester L.F.; 1.5 µm AlGainAs Quantum Well Lasers Grown By The Digital Alloy Technique; Conference: CLEO 2000; May 2000; pp. 174-175. Nishi, Kenichi; Saito, Hideaki; and Sugou, Shigeo; A Narrow Photoluminescence Linewidth of 21 meV at 1.35 µm From Strain-Reduced InAs Quantum Dots Covered By In<sub>0.2</sub>Ga<sub>0.8</sub>As Grown On GaAs Substrates; Applied Physics Letters; Vol. 74, No. 8; February 22, 1999; pp. 1111-1113. Park, G.; Shchekin, O.B.; Huffaker, D.L.; and Deppe, D.G.; Very Low Threshold Oxide-Confined 1.3 µm GaAs-Based Quantum Dot Laser; CLEO 2000 Conference; May 2000, pp. 349-350. EXAMINER: Initial if references considered, whether or not citation is in conformance with MPEP § 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.



Sheet 6 of 7 FORM PTO-1449 U.S. DEPARTMENT OF COMMERCE Attorney's Docket No. Serial No. (REV. 6-89) Patent and Trademark Office 22920-06460. 10/087,408 INFORMATION DISCLOSURE CITATION **Applicant** Xiaodong Huang et al. Filing Date Group Art Unit (Use several sheets if necessary) March 1, 2002 Unassigned OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.) Park, Gyounwon; Shchekin, Oleg B.; Csutak, Sebastian; Huffaker, Diana L.; and Deppe, Dennis G.; Room-Temperature Continuous-Wave Operation Of A Single-Layered 1.3µm Quantum Dot Laser, Applied Physics Letters, Vol. 75, No. 21; November 22, 1999; pp. 3267-3269. Prieto, J.A.; Armelles, G.; Priester, C.; Garcia, J.M.; Gonzalez, L.; and Garcia, R.; Strain-Induced Optical Anisotropy In Self-Organized Quantum Structures At The E, Transition; Applied Physics Letters; Vol. 76, No. 16; April 17, 2000; pp. 2197-2199. Qiu, Y.; Gogna, P.; Forouhar, S.; Stintz, A.; and Lester, L.F.; High-Performance InAs Quantum Dot Lasers Near 1.3 μm, Applied Physics Letters; Vol. 79, Number 22, November 26, 2001; pp. 3570-3572. Qiu, Y.; Gogna, P.; and Forouhar, S.; High Temperature Continuous Wave Operation Of InAs Quantum Dot Lasers Near 1.3 μm; Conference: IEEE Lasers & Electro-Optics Society; LEOS Conference: November 12-16, 2001; pp. 267-268. Sakaki, Hiroyuki; Quantum Wires, Quantum Boxes And Related Structures; Physics, Device Potentials And Structural Requirements; Surface Science; Vol. 267; 1992; pp.623-629. Shernyakov, Yu.M.; Bedarev, D.A.; Kondrat'eva, E.Yu.; Kop'ev, P.S.; Kovsh; A.R.; Maleev, N.A.; Maximov, M.V.; Mikhrin, S.S.; Tsatsul'nikov, A.F.; Ustinov, V.M.; Volovik, B.V.; Zhukov, A.E.; Alferov, Zh.l.; Ledentsov, N.N.; and Bimberg, D.; 1.3µm GaAs-Based Laser Using Quantum Dots Obtained By Activated Spinodal Decomposition; Electronics Letters; Vol. 35, No. 11; May 27, 1999; pp. 898-900. Shoji, H.; Mukai, K.; Ohtsuka, N.; Sugawara, M.; Uchida, T.; and Ishikawa, H.; Lasing At Three-Dimensionally Quantum-Confined Sublevel Of Self-Organized Ing Gao As Quantum Dots By Current Injection; IEEE Photonics Technology Letters, Vol. 7, No. 12; December 1995; pp. 1385-1387. Stintz, A.; Liu, G.T.; Gray, A.L.; Spillers, R.; Delgado, S.M.; and Malloy, K.J.; Characterization Of InAs Quantum Dots In Strained In<sub>x</sub>Ga<sub>1-x</sub>As Quantum Wells; J.Vac.Sci.Technol.; Vol. B 18(3); May/Jun 2000; pp.1496-1501. Stintz, A.; Liu, G.T.; Li, H.; Lester, L.F.; and Malloy, K.J.; Low-Threshold Current Density 1.3-µm InAs Quantum-Dot Lasers With The Dots-In-A-Well (DWELL) Structure; IEEE Photonics Technology Letters; Vol. 12, No. 6; June 2000; pp. 591-593. Tabuchi, H.; and Ishikawa H.; External Grating Tunable MQW Laser With Wide Tuning Range Of 240nm; Electronic Letters; Vol. 26, No. 11; May 24, 1990; pp. 742-743. 77 Thomson, J.D.; Herrmann, E.; Summers, H.D.; Smowton, P.M.; and Hopkinson, M.; Temperature Insensitive Quantum Dot Structures For Vertical Cavity Lasers; CLEO 2000 Conference; May 2000; pp. 347-348. Ustinov, V.M.; Maleev, N.A.; Zhukov, A.E.; Kovsh, A.R.; Egorov, A.Yu.; Lunev, A.V.; Volovik, B.V.; Krestnikov, I.L.; Musikhin, Yu.G.; Bert, N.A.; Kop'ev, P.S.; and Alferov, Zh.I.; InAs/InGaAs Quantum Dot Structures On GaAs Substrates Emitting at 1.3µm; Applied Physics Letters; Vol. 74, No. 19; May 10. 1999; pp. 2815-2817. Varangis, P.M.; Li, H.; Liu, G.T.; Newell, T.C.; Stintz; A.; Fuchs, B.; Malloy, K.J.; and Lester, L.F.; Low-Threshold Quantum Dot Lasers With 201nm Tuning Range; Electronics Letters; Vol. 36, No. 18; August 31, 2000. EXAMINER Rome of ton DATE CONSIDERED EXAMINER: Initial if references considered, whether or not citation is in conformance with MPEP § 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant



Sheet <u>7</u> of 7 **FORM PTO-1449** U.S. DEPARTMENT OF COMMERCE Attorney's Docket No. Serial No. (REV. 6-89) Patent and Trademark Office 22920-06460 10/087,408 INFORMATION DISCLOSURE CITATION **Applicant** Xiaodong Huang et al. (Use several sheets if necessary) Filing Date **Group Art Unit** March 1, 2002 Unassigned OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.) Varangis, P.M.; Li, H.; Liu, G.T.; Newell, T.C.; Stintz; A.; Fuchs, B.; Malloy, K.J.; and Lester, L.F.; 183 nm Tuning Range In A Grating-Coupled External-Cavity Quantum Dot Laser, IEEE 2000 International Semiconductor Laser Conference; pp. 137-138. Wang, R.H.; Stintz, A.; Rotter, T.J.; Malloy, K.J.; and Lester, L.F.; Low Threshold Oxide-Confined InAs Quantum Dash Ridge Waveguide Lasers On InP Substrates; Conference: IEEE Lasers & Electro-Optics Society; LEOS Conference; November 12-16, 2001; pp. 405-406. Wang, R.H.; Stintz, A.; Varangis, P.M.; Newell, T.C.; Li, H.; Malloy, K.J.; and Lester, L.F.; Room-Temperature Operation Of InAs Quantum-Dash Lasers On InP (001); IEEE Photonics Technology Letters; Vol. 13, No. 8; August 2001; pp. 767-769. Wang, Ronghua; Stintz, A.; Varangis, P.M.; Newell, T.C.; Li, H.; Lester, L.F.; and Malloy, K.J.; 1.6 µm Single And Multiple-Stack Room Temperature Quantum Dash Lasers On InP; Conference: CLEO (Conference On Lasers And Electro Optics)/QELS Plenary Session And Awards Ceremony; May 9, 2001. Wang, Zhanguo; Liu, Fengqi; Liang, Jiben; and Xu, Bo; Self-Assembled InAs/GaAs Quantum Dots And Quantum Dot Laser, Science in China; Vol. 43, No. 8; August 2000; pp. 861-870. Wasilewski, Z.R.; Fafard, S.; and McCaffrey J.P.; Size And Shape Engineering Of Vertically Stacked Self-Assembled Quantum Dots; Journal Of Crystal Growth; Vol. 201, 202; 1999; pp. 1131-1135. Willatzen, M.; Tanaka, T.; Arakawa, Y.; and Singh, J.; Polarization Dependence Of Optoelectronic Properties In Quantum Dots And Quantum Wires - Consequences Of Valence-Band Mixing; IEEE Journal of Quantum Eletronics; Vol. 30, No. 3; March 1994; pp. 640-653. Zhukov, A.E.; Kovsh, A.R.; Egorov, A.Yu.; Maleev, N.A., Ustinov, V.M.; Volovik, B.V.; Maksimov, M.V.; Tsatsul'nikov, A.F.; Ledenstov, N.N.; Shernyakov, Yu.M.; Lunev, A.V., Musikhin, Yu.G.; Bert, N.A.; Kop'ev, P.S.; and Alferov, Zh.I.; Photo And Electoluminescence In The 1.3 µm Wavelength Range From Quantum-Dot Structures Grown On GaAs Substrates; Semiconductors; Vol. 33, No. 2; February 1999; pp. 153-156. EXAMINER omer DATE CONSIDERED EXAMINER: Initial if references considered, whether or not citation is in conformance with MPEP § 609; Draw line through citation if not in conformance and not considered. include copy of this form with next communication to applicant.

PTO/SB/08A (10-01)

Approved for use through 10/31/2002. OMB 0851-0031

U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Experwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

TOTATE	Substitute fo	r form 1449A/PT	О	Complete if Known			
INFO	PMATIO	N DISCI	.OSURE	Application No.	10/087,408		
	TEMENT			Filing Date	March 1, 2002		
SIAI	CINCIA	DIAFF	LICANI	First Named Inventor	Xiaodong Huang	<u> </u>	
				Art Unit	2881		
				Examiner Name	Not yet known		
Sheet	1	of	1	Attorney Docket Number	22920-06460		

			U.S. PAT	ENT DOCUMENTS
		Document No.		
Examiner Initials*	Cite No.1	Number – Kind Code <sup>2</sup> (if known)	Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document
	A	US-5,541,949	07/30/1996	Bhat et al.
交行	В	US-5,543,354	08/06/1996	Richard et al.
	С	US-5,557,627	09/17/1996	Schneider, Jr. et al.
	D .	US-5,710,436	01/20/1998	Tanamoto et al.
7	E	US-5,714,765	02/03/1998	Noetzel et al.
) <b>V</b>	F	US-5,881,086	03/09/1999	Miyazawa
	G	US-5,953,356	09/14/1999	Botez et al.
72	н	US-6,117,699	09/12/2000	Lemoff et al.
S	1	US-6,177,684	01/23/2001	Sugiyama
)(1)	J	US-6,285,704	09/04/2001	Kullander-Sjoberg et al.
	К	US-6,329,668	12/11/2001	Razeghi

FOREIGN PATENT DOCUMENTS							
	Foreign Patent Document						
Examiner Initials*	Cite No.1	Country Code <sup>3</sup> – Number <sup>4</sup> Kind Code <sup>5</sup> (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document		T⁵	
		·					
		·		,			
	}						

		OTHER REFERENCES - NON-PATENT LITERATURE DOCUMENTS	
Examiner Initiats*	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T⁵
<u> </u>	<u> </u>	U.S. Patent Application Publication, US 2001/0050934, December 13, 2001; Choquette et al.	
1			<u> </u>

22920/06460/DOCS/1308478.1

Examiner Signature	amed a	Date Considered	2/03/04	

Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>&</sup>lt;sup>1</sup>Applicant's unique citation designation number (optional), <sup>2</sup>See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04, <sup>3</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 18 if possible. <sup>6</sup>Applicant is to place a check mark here if English language Translation is attached.

Approved for use through 10/31/2002. OMB 0651-0031 U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

r the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number,

Substitute for form 1449A/PTO Complete if Known Application N . INFORMATION DISCLOSURE 10/087,408 **Filing Date** March 1, 2002 STATEMENT BY APPLICANT **First Named Inventor** Xiaodong Huang Art Unit 2828 **Examiner Name** James W. Davie Sheet 22920-06460 **Attorney Docket Number** 

U.S. PATENT DOCUMENTS								
		Document No.						
Examiner Initials*	Cite No. <sup>1</sup>	Number – Kind Code <sup>2</sup> (if known)	Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document				
	1	US-5,781,575 A	07-14-1998	Nilsson				
	2	US-5,930,278 A	07-27-1999	Menigaux				

. ••	FOREIGN PATENT DOCUMENTS								
		Foreign Patent Document							
Examiner Initials*	Cite No.1	Country Code <sup>3</sup> – Number <sup>4</sup> Kind Code <sup>5</sup> (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	T <sup>6</sup>				
•									

		OTHER REFERENCES - NON-PATENT LITERATURE DOCUMENTS	
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T⁰
	3	Bloch, J. et al., "Room-temperature 1.3 µm emission from InAs quantum dots grown by metal organic chemical vapor deposition," <i>Applied Physics Letters</i> , American Institute of Physics, New York, U.S., Vol. 75, No. 15, October 11, 1999, pages 2199-2201.	
70	4	Evans, P.W. et al., "Edge-emitting quantum well heterostructure laser diodes with auxiliary native-oxide vertical cavity confinement," <i>Applied Physics Letters</i> , American Institute of Physics, New York, U.S., Vol. 67, No. 21, November 20, 1995, pages 3168-3170.	
78	5	Garcia, J.M. et al., "Electronic states tuning of InAs self-assembled quantum dots," <i>Applied Physics Letters</i> , American Institute of Physics, New York, U.S., Vol. 72, No. 24, June 15, 1998, pages 3172-3174.	
9	6	Kim, Jin K. et al., "Lateral Carrier Confinement in Miniature Lasers Using Quantum Dots," <i>IEEE Journal of Selected Topics in Quantum Electronics</i> , IEEE Service Center, U.S., Vol. 6, No. 3, May/June 2000, pages 504-510.	
)D	7	Ledentsov N.N. et al., "Interconnection between gain spectrum and cavity mode in a quantum-dot vertical-cavity laser," <i>Semiconductor Science and Technology</i> , Institute of Physics, London, G.B., Vol. 14, No. 1, 1999, pages 99-102.	

	_				
Examiner	1		Date		
Signature	1		l l		·
Signature	1 1		Considered	1 1 1 1 1 1	
				1 2 /2 // 4	
	<i>/</i>	ame Col	<u></u>	1 4/3/0	
					<del></del>

\*EXAMINER: Initial incerence considered, whether or not citation is in conformance with MPEP 609. Draw line inrough citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

'Applicant's unique citation designation number (optional). <sup>2</sup>See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. <sup>3</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup>Applicant is to place a check mark here if English language Translation is attached.

PTO/SB/08A (10-01)
Approved for use through 10/31/2002. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

22920-06460

er the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449A/PTO Compl te if Known Application No. 10/087,408 INFORMATION DISCLOSURE Filing Date March 1, 2002 STATEMENT BY APPLICANT **First Named Inventor** Xiaodong Huang Art Unit 2828 **Examiner Name** James W. Davie

**Attorney Docket Number** 

Sheet

of

		OTHER REFERENCES - NON-PATENT LITERATURE DOCUMENTS	
Examiner Initials*	Cite No.1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T.g
	. 8	Park, Gyoungwon et al., "Temperature Dependence of Gain Saturation in Multilevel Quantum Dot Lasers," <i>IEEE Journal of Quantum Electronics</i> , IEEE Inc., New York, U.S., Vol. 36, No. 9, September 2000, pages 1065-1071.	
	9	Saito, Hideaki et al., "Controlling polarization of quantum-dot surface-emitting lasers by using structurally anisotropic self-assembled dots," <i>Applied Physics Letters</i> , American Institute of Physics, New York, U.S., Vol. 71, No. 5, August 4, 1997, pages 590-592.	·
JA	10	Schur, Richard et al., "Vertical Microcavity Lasers with InGasAs/GaAs Quantum Dots Formed by Spinodal Phase Separation," <i>Japanese Journal of Applied Physics</i> , Tokyo, Japan, Vol. 36, No. 3B, March 15, 1997, pages 357-360.	
	11	Shchekin, Oleg B. et al., "Low-Threshold Continuous-Wave Two-Stack Quantum-Dot Laser with Reduced Temperature Sensitivity," <i>IEEE Photonics Technology Letters</i> , IEEE Inc., New York, U.S., Vol. 12, No. 9, September 2000, pages 1120-1122.	·
50	12	Ustinov, V.M. et al., "High output power CW operation of a quantum dot laser," Compound Semiconductors 1999, Proceedings of the 26 <sup>th</sup> International Symposium on Compound Semiconductors, Berlin, Germany, August 22-26, 1999, Institute of Physics Conference Series, IOP Publishing Ltd., London, G.B., No. 166, pages 277-280.	·
20	13	PCT International Search Report, International Application No. PCT/US01/31256, May 27, 2003, 7 pages.	
70	14	PCT International Search Report, International Application No. PCT/US02/06221, May 27, 2003, 4 pages.	

Examiner Signature	ames Cano	Date Considered	2/03/04	
	<del>/</del>	<del></del>		

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Applicant's unique citation designation number (optional). <sup>2</sup>See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. <sup>3</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup>Applicant is to place a check mark here if English language Translation is attached.

PTO/SB/08A (10-01)
Approved for use through 10/31/2002. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449A/PTO Compl te if Known Application N . 10/087,408 INFORMATION DISCLOSURE **Filing Date** March 1, 2002 STATEMENT BY APPLICANT First Named Inventor Xiaodong Huang Art Unit 2828 **Examiner Name** James W. Davie Sheet Attorney Docket Number 22920-06460

<u> </u>			U.S. PAT	ENT DOCUMENTS		
		Document No.		<u> </u>		<del></del>
Examiner Initials*	Cite No.1	Number Kind Code <sup>2</sup> (if /known)	Date MM-DD-YYYY		Name of Patentee or Applicant of Cited Document	<u></u>
)2)	1	US-5,608,229 A	03-04-1997	Mukai et al.		17 31 (L. 18 3 3 3 3

Y FOREIGN PATENT DOCUMENTS						e te e e e e e e e e e e e e e e e e e	and the second
		Foreign Patent Document				<del></del>	<u> </u>
Examiner Initials*	Cite No.1	Country Code <sup>3</sup> – Number <sup>4</sup> Kind Code <sup>5</sup> (if known)	Publication Date MM-DD-YYYY		Name of Patentee or Applicant of Cited Document	****	<b>T</b> 8
•						4	72.10

		OTHER REFERENCES - NON-PATENT LITERATURE DOCUMENTS	
Examiner Initials*	Cite No.1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T <sup>0</sup>
<u>D</u>	2	Komori, Kazuhiro et al., "Noise Study of Low-Dimensional Quantum-Well Semiconductor Laser Amplifiers," <i>IEEE Journal of Quantum Electronics</i> , IEEE Inc., New York, US, Vol. 28, No. 9, September 1, 1992, pages 1894-1900.	
	3	Saito, Hideaki et al., "Room-temperature lasing operation of a Quantum-dot vertical-cavity surface-emitting laser," <i>Applied Physics Letters</i> , " American Institute of Physics, New York, US, Vol. 69, No. 21, November 18, 1996, pages 3140-3142.	7
)()	4	Utzmeier, T. et al., "Growth and characterization of self-organized InSb quantum dots and quantum dashes," Journal of Crystal Growth, North-Holland Publishing Co., Amsterdam, The Netherlands, Vol. 175-176, May 1, 1997, pages 725-729.	REI
	5	PCT International Search Report, International Application No. PCT/US01/29561, June 6, 2003, 7 pages.	113,
		F :3	11.7

<u></u>				•	
Examiner Signature	ames	Davis	Date Considered	02/03/04	
	<i>(</i> . )				

Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup>Applicant's unique citation designation number (optional). <sup>2</sup>See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. <sup>3</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup>Applicant is to place a check mark here if English language Translation is attached.